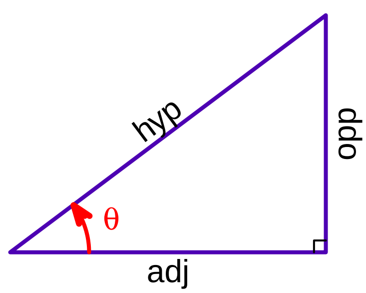
Right-triangle trigonometry cheat sheet

- On a right triangle with a marked acute angle, we can identify the leg **opposite** the marked angle by starting at the angle, drawing a line through the center of mass of the triangle, and continuing until hitting a side.
- The **hypotenuse** is opposite the right angle, and the hypotenuse is always the longest side of a right triangle.
- The **adjacent** leg is the leg (not hypotenuse) that touches the marked angle.
- Below I've drawn a right triangle in standard orientation, but in problems, the right triangle is often rotated and reflected, so it is important to have a process for identifying the hypotenuse, and whether a leg is opposite a given angle or adjacent a given angle.



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\begin{aligned}
\sin(\theta) &= \frac{\text{opp}}{\text{hyp}} & \text{opp} &= \text{hyp}\cdot\sin(\theta) & \text{hyp} &= \frac{\text{opp}}{\sin(\theta)} & \theta &= \arcsin\left(\frac{\text{opp}}{\text{hyp}}\right)\\
\cos(\theta) &= \frac{\text{adj}}{\text{hyp}} & \text{adj} &= \text{hyp}\cdot\cos(\theta) & \text{hyp} &= \frac{\text{adj}}{\cos(\theta)} & \theta &= \arccos\left(\frac{\text{adj}}{\text{hyp}}\right)\\
\tan(\theta) &= \frac{\text{opp}}{\text{adj}} & \text{opp} &= \text{adj}\cdot\tan(\theta) & \text{adj} &= \frac{\text{opp}}{\tan(\theta)} & \theta &= \arctan\left(\frac{\text{opp}}{\text{adj}}\right)
\end{aligned}
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